Fraunhofer LUCOLEDs to replace lamps

The photo shows GaN-based blue LEDs used to generate white light by means of luminescent dye. Workers at the Fraunhofer Institute for Applied Solid State Physics have produced a mixture of colours over a wide colour range by luminescence conversion. The actual colour depends on the type of dye used and in addition to white light, arbitrary colour tones of the spectrum are possible, e.g. purple light.

Until recently, single white LEDs were not feasible but have the allure of replacing the conventional filament-based light bulb. The market for such a replacement is huge and so worldwide a great deal of work is underway to try to achieve a white emitting solid state replacement, especially the LED. However, the monochromatic light emission of LEDs had made it necessary to combine at least three LEDs in order to create the suitable white light. Such combinations are popular in 3-colour indicator lamps but have not caught on as bulb replacements.

The Fraunhofer LUCO-LEDs use a combination of Nichia (sapphire/GaN) and Cree Research (SiC/GaN) LEDs. These blue emitting LEDs are combined with the dyes to give bright light emission at longer wavelengths as shown in the photo. The Fraunhofer Institute has also fabricated blue LEDs but these are not yet bright enough for the application. The LUCOLED is in two forms: organic and inorganic (a Ce3+ doped polycrystalline YAG). They are simple to fabricate, inexpensive and suited to large scale production. Indeed, Siemens will begin production of the LUCOLEDs later this year.

Contact: Roland Diehl, Fraunhofer-Institüt für Angewandte Festkörperphysik IAF, Tullastrasse 72, D-79108 Freiburg I. Br., Germany. Tel/fax: +49 (0) 761 5159-416 / -111.

AIXTRON update

According to VLSI Research Inc., a US independent market research company, AIXTRON GmbH with 1995 sales of almost US$23 million recorded the most MOVPE systems sold worldwide in 1995.

The Aachen-based company told *III-Vs Review* that 1996 figures showed further steady growth with sales exceeding US$33 million which is an increase of around 50% on 1995. Prospects were looking good for the New Year based on bookings of over US$45 million (December, 1996).

AIXTRON has matched this impressive sales record with a doubling in size of its Customer Service Department and has increased its production by 400% on 1995 with a corresponding increase in personnel.

Applications range from the AIX 2000/2400 and AIX3000 production systems as well as the newly-introduced AIX2400/2600G3 cassette-to-cassette system to R&D systems for a number of different materials technologies. Over 35 systems were sold worldwide in 1996 for UHB LEDs, lasers, solar cells etc. — not only with new customers but also repeat orders — from such established customers as H-P, ITT Night Vision, LG Electronics, Kopin, Siemens, TECSTAR and UEC. For example, in December AIXTRON proudly announced a further sale of an AIX3000 production system to TECSTAR's Applied Solar Division.

The manufacturer of solar cells is based in the City of Industry in California and with its total of five AIX3000 systems will represent the world's largest installed capacity for MOVPE growth of GaAs and GaInP photovoltaics.

Finally, AIXTRON has become the first commercial sponsor of the on-line Materials Research Society's GaN Journal MIJSN at **http://nsr.mij.mrs.org** Check out this fascinating site for refereed papers and news updates on GaN and related wide bandgap materials.

Contact: Sarah O'Connell, AIXTRON GmbH, tel/fax: +49 241 8909 0/40.

0961-1290/97/$17.00